

*CLAIMS*

We claim:

1. A top grinding ring for an EL type pulverizer comprising at least one integral snubber formed as part of the parent material of the top grinding ring casting as a contour change  
5 on an outer edge of the top grinding ring casting.

2. The top grinding ring according to claim 1, wherein the at least one integral snubber formed as part of the original material of the top grinding ring casting is oriented at an angle  $\alpha$  with respect to a radial line originating at a center of the grinding ring, angle  $\alpha$  having a value within a range of approximately 15 degrees to approximately 65 degrees.

10 3. The top grinding ring according to claim 2, wherein angle  $\alpha$  has a value of approximately 28 degrees.

15 4. The top grinding ring according to claim 1, further comprising a continuous arcuate grinding track formed on a bottom surface of the top grinding ring and adapted to receive a plurality of pulverizer balls each having an OD and circumference which roll against the arcuate grinding track.

5. The top grinding ring according to claim 4, wherein the continuous arcuate grinding track has an arcuate length that is at least 29% of the circumference of one pulverizer ball of the plurality of balls.

20 6. The top grinding ring according to claim 1, further comprising a plurality of equally spaced apart flutes extending downwardly from the outer edge of the top grinding ring.

7. The top grinding ring according to claim 6, wherein the total circumferential length of all of the equally spaced apart flutes exhibits an arcuate length of at least 50% of the total available circumference at the outer edge of the top grinding ring.

8. The top grinding ring according to claim 4, wherein the continuous arcuate grinding track formed on a bottom surface of the top grinding ring has a diameter which is held to a circular tolerance within  $\pm 1/16$ " of its ultimate concentricity.

5 9. The top grinding ring according to claim 5, wherein the continuous arcuate grinding track formed on a bottom surface of the top grinding ring has an arcuate length which is held to circular tolerance within  $\pm 1/16$ " of its ultimate curvature.

10 10. The top grinding ring according to claim 1, comprising a plurality of integral snubbers formed as part of the parent material of the top grinding ring casting as a contour change on an outer edge of the top grinding ring casting, each of the integral snubbers of said plurality of snubbers being equally spaced around a circumference of the top grinding ring.

15 11. An EL type pulverizer, comprising: a top grinding ring having a continuous arcuate grinding track formed on a bottom surface of the top grinding ring and adapted to receive a plurality of pulverizer balls each having an OD and circumference, and at least one integral snubber formed as part of the parent material of the top grinding ring casting as a contour change on an outer edge of the top grinding ring casting; and snubber attachment means attached to the housing for securing the at least one integral snubber to the housing.

20 12. The pulverizer according to claim 11, wherein the snubber attachment means comprises a snubber bracket assembly including a snubber bracket secured to the pulverizer housing, a wear plate secured to the at least one integral snubber, and a shim pack therebetween for adjusting a clearance between the snubber wear plate and the snubber bracket.

13. The pulverizer according to claim 12, wherein the snubber attachment means is removably secured to the pulverizer housing and to the at least one integral snubber to permit the snubber attachment means to be installed and dismantled from the pulverizer housing

subsequent to top grinding ring installation and removal, the shim pack providing means to adjust or eliminate the clearance between the snubber wear plate and the snubber bracket.

14. The pulverizer according to claim 11, comprising a bottom grinding ring having a continuous arcuate grinding track formed on a top surface of the bottom grinding ring and adapted to receive a plurality of pulverizer balls each having an OD and circumference which roll against the continuous arcuate grinding track, the bottom grinding ring having an arcuate length that is at least 23% of the total circumference of one pulverizer ball of the plurality of balls.

15. The pulverizer according to claim 14, wherein the continuous arcuate grinding track formed on a top surface of the bottom grinding ring has a diameter which is held to a circular tolerance within  $\pm 1/16$ " of its ultimate concentricity.

16. The pulverizer according to claim 14, wherein the continuous arcuate grinding track formed on a top surface of the bottom grinding ring has an arcuate length which is held to a circular tolerance within  $\pm 1/16$ " of its ultimate curvature.

17. The pulverizer according to claim 11, comprising a plurality of pulverizer balls each having an OD and circumference which roll against the arcuate grinding tracks of both the top and bottom grinding rings, each of the plurality of pulverizer balls having a nominal OD of one of 12-1/4 inches and 13-5/8 inches when in a new condition and first installed in the pulverizer.

18. A top grinding ring for an EL type pulverizer comprising a continuous arcuate grinding track formed on a bottom surface of the top grinding ring and adapted to receive a plurality of pulverizer balls each having an OD and circumference which roll against the arcuate grinding track, wherein the continuous arcuate grinding track has an arcuate length that is at least 29% of the circumference of one pulverizer ball of the plurality of balls.

19. The top grinding ring according to claim 18, wherein the continuous arcuate grinding track formed on a bottom surface of the top grinding ring has a diameter which is held to a circular tolerance within  $\pm 1/16$ " of its ultimate concentricity.

5 20. The top grinding ring according to claim 18, wherein the continuous arcuate grinding track formed on a bottom surface of the top grinding ring has an arcuate length which is held to circular tolerance within  $\pm 1/16$ " of its ultimate curvature.

10 21. A bottom grinding ring for an EL type pulverizer comprising a continuous arcuate grinding track formed on a top surface of the bottom grinding ring and adapted to receive a plurality of pulverizer balls each having an OD and circumference which roll against the arcuate grinding track, wherein the continuous arcuate grinding track has an arcuate length that is at least 23% of the circumference of one pulverizer ball of the plurality of balls.

15 22. The bottom grinding ring according to claim 21, wherein the continuous arcuate grinding track formed on a top surface of the bottom grinding ring has a diameter which is held to a circular tolerance within  $\pm 1/16$ " of its ultimate concentricity.

23. The bottom grinding ring according to claim 21, wherein the continuous arcuate grinding track formed on a top surface of the bottom grinding ring has an arcuate length which is held to circular tolerance within  $\pm 1/16$ " of its ultimate curvature.